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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,359	02/07/2002	Masaki Nitta	01272.020508	7439

5514 7590 06/13/2005

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EXAMINER	
NGUYEN, LAM S	
ART UNIT	**PAPER NUMBER**
2853	

DATE MAILED: 06/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/067,359	NITTA ET AL.	
	Examiner	Art Unit	
	LAM S. NGUYEN	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 April 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13,15-20,22 and 25-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-13,15,18-20,22 and 25-30* is/are rejected.

7)☒ Claim(s) *4,5,16 and 17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-3, 6-13, 15, 18-20, 22, and 25-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koike et al. (US 5767876) in view of Matsubara et al. (US 5633663).

Referring to claims 1, 13, 25-26, and 30:

Koike et al. discloses a color ink-jet recording apparatus using a black recording head (*FIG. 36, element 81*) that ejects black ink on the basis of black image data and color recording heads that ejects color ink on the basis of color image data (*FIG. 36, element 82*), the color ink permeating through a recording medium at a higher speed than said black ink (*column 4, line 57-65: The image is recorded by using low-permeability black ink and high-permeability color ink*), the apparatus completing a record image in a predetermined recording area including pixels (*column 4, lines 35-38: The unit pixel is a dot matrix consisting of ink dots in each of which a black ink dot and a color ink dot overlap with each other and blank dots. FIG. 49-51: The area includes the bands A, B, and C, wherein each band includes a plurality of dot matrixes (pixels)*) on said recording medium, the apparatus comprising:

data generating means, which, for each of the plurality of recording heads, uses mask patterns (*FIG. 16: Each color image date is filtered by a corresponding filter 34-37*) to generate image data for each of said recording scans corresponding to said predetermined

recording area, so that black image data corresponding to said predetermined recording area are allotted to each of said recording scans, and color image data corresponding to said predetermined recording area are to each of said recording scans (*FIG. 49-51: In each recording scan, black ink dots are allotted to a corresponding band and each of the color inks is also allotted to each of the bands*),

wherein each of the mask pattern for said black image data and color image data used during the same recording scan has different allotment rates (*FIG. 49-51: the allotment rates of black and colors are different in the same scan; For example, in FIG. 49 and column 27, line 16-18, "black and cyan are recorded by a first record scan" to print the band A with the allotment rate of Cyan is 50% and the allotment rate of Black is 33%. In the next scan, the same allotment rates of the black and cyan are recorded together to print band B (FIG. 50). In the third scan, similarly, the black and cyan are recorded together to print band C (FIG. 51). Therefore, the black image data and the cyan image data are used during the same scan for every scans with different allotment rates*).

Koike et al. wherein each of the black recording head and the respective color recording heads to perform a plurality of recording scans in the same pixel to form image.

Matsubara et al. discloses an ink jet printer having a plurality of recording heads for ejecting ink of different colors on a recording medium by performing plurality of mains scans using a plurality of patterns (*Abstract*) that causes each of the black recording head and the respective color recording heads to perform the plurality of recording scans in the same pixel to form a complete image pixel (*FIG. 28: The complete printed image pixel 3214 is formed by four*

printing passes, wherein during each pass, black and color heads eject ink in accordance to the mask patterns).

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the process for forming image disclosed by Koike et al. to cause each of the black recording head and the respective color recording heads to perform a plurality of recording scans in the same pixel to form image as disclosed by Matsubara et al. The motivation for doing so would have been to obtain high-density image while maintaining the effect of preventing nozzle variations as taught by Matusbara et al. (*column 29, lines 45-49*).

Koike et al. also discloses the following claimed invention:

Referring to claim 2: wherein mask pattern having different allotment rates are used as the mask patterns for said black image data and color image data (*FIG. 38-51*).

Referring to claims 3, 15: further comprising black image data allotment rate setting means for setting, for each of said recording scans, allotment rates for the mask patterns for said black image data (*FIG. 38-51: a corresponding means for setting the rate of black image data for each scan*); and

color image data allotment rate setting means for setting, for each of said recording scans, allotment rates for the: mask patterns for said color image data (*FIG. 38-51: a corresponding means for setting the rate of color image data for each scan*);

wherein both said image data allotment rate setting means set different allotment rates for the mask patterns for said black image data and color image data used during the same recording scan (*FIG. 38-51: the allotment rates of black and colors are different; For*

example, in FIG. 49, recording scan A, while the allotment rate of Cyan is 50%, the allotment rate of Black is 33%).

Referring to claims 6, 18: wherein when a black image is to be formed in said predetermined area, before or after the black ink is caused to impact the recording medium, at least one of said plural types of color ink is caused to impact locations onto which the black ink is ejected (*FIG. 40-42, 44-45, 48-51, FIG. 34A_B)*).

Referring to claims 7, 19: further comprising a thinning means, which thins said black image data at a predetermined thinning rate and causes the plural types of color ink to impact portions of the recording area in which said black image data has been thinned (*FIG. 44-45: scan A and FIG. 14A-B*).

Referring to claims 8, 20: wherein at least one of said plural types of color ink is reactive and tends to cause said black ink to solidify or cohere when contacting with said black ink (*column 21, line 32-41*).

Referring to claims 9, 21: wherein said recording heads executes recording only during scans in one of the forward and backward scanning directions, and in the scanning direction in which the recording is carried out, said color recording heads are arranged in front of said black recording head (*FIG. 46*).

Referring to claims 10, 22: wherein if said recording heads carry out recording in both the forward and backward scanning directions, then during the first recording scan, said color image data has a higher allotment rate than said black image data (*FIG. 49*).

Referring to claims 11, 23: wherein said plural color ink types include cyan, magenta, and yellow ink (*FIG. 36, element 82*).

Referring to claims 12, 24: wherein said recording heads exert thermal energy to generate bubbles in the ink so that energy generated by the bubbles causes the ink to be ejected (*column 1, line 29-32*).

Referring to claims 26-27: a program for executing image processing and a computer-readable storage medium storing the program (*column 18, lines 18-31*).

Referring to claims 28-29: wherein the allotment rate of the mask pattern for said color/ black image data used in one recording scan of two recording scans among said plurality of recording scans is different from the allotment rate of the mask pattern for said color/black image data used in the other recording scan of said two recording scans (*FIG. 49-51: In the first scan (FIG. 49), the allotment rates of black, cyan, and magenta inks to print band A are 33%, 50%, and 0%, respectively. In the second scan, the allotment rates of black and cyan inks to print the same band A are both 0%, but the allotment rate of magenta ink is 16%*).

Referring to claims 30: wherein the allotment rates of the respective mask patterns for said black and color image data used in one recording scan of two recording scans among said plurality of recording scans are different to each other, and the allotment rates of the respective mask patterns for said black and color image data used in the other recording scan of said two recording scans are different to each other (*FIG. 49-51: In the first scan (FIG. 49), the allotment rates of black and magenta inks to print band A are different to each other (33% and 0%, respectively). In the second scan, the allotment rates of black and magenta inks to print the same band A are also different to each other, while black is 0%, magenta is 16%*).

Allowable Subject Matter

Claims 4-5 and 16-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The reasons for allowance were indicated in the previous office action.

Response to Arguments

Applicant's arguments with respect to claims 1, 13,25, and 30 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN
June 9, 2005

Hai Li Pham

HAI PHAM
PRIMARY EXAMINER